DOCUMENT RESUME

ED 376 129 SP 035 519

AUTHOR Wilkes, Ron
TITLE Using Shulman's Model of Pedagogical Reasoning and Action in a Preservice Program.
PUB DATE Jul 94
NOTE 18p.; Paper presented at the Annual Meeting of the Australian Teacher Education Association (24th, Brisbane, Queensland, Australia, July 3-6, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Assignments; Basic Business Education; *Education Courses; Foreign Countries; Higher Education; *Instructional Development; Preservice Teacher Education; Reflective Teaching; Secondary Education; *Student Teacher Attitudes; Student Teachers; *Student Teaching; *Teaching Models
IDENTIFIERS *Pedagogical Content Knowledge; Shulman (Lee S); University of Melbourne (Australia)

ABSTRACT

Lee Shulman's model of pedagogical reasoning and action is related to his theory of pedagogical content knowledge and includes the following components: comprehension; transformation (preparation, representation, selection, and adaptation and tailoring to student characteristics); instruction; evaluation; reflection; and new comprehensions. The model was presented to fourth-year Bachelor of Education (Secondary) business studies students at the University of Melbourne (Victoria, Australia) enrolled in a course linking discipline studies and education studies. The model was presented as a set of processes of central importance to the development of pedagogical content knowledge. Two assignments were made focusing on the model--one task required identification of a concept and a curriculum context and writing a report on ideas for the transformation of that concept for teaching purposes, and the other task required transformation of subject matter into a cohesive package of student exercises and activities, which are conceived as a particular form of representation of subject matter. Shulman's model was seen as accessible and practical by almost all the preservice teachers, as being robust and adaptable across specialist subject fields, and as having built-in variety through the widely inclusive notions of "representational repertoire" and "instructional repertoire" and combinations of the two. (Contains 24 references.) (JDD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 376 129

Using Shulman's Model of Pedagogical Reasoning and Action in a Preservice Program

Ron Wilkes

Institute of Education
University of Melbourne

Australian Teacher Education Association

24th Annual Conference

July, 1994

Brisbane

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Wilkes

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

SP035519

BEST COPY AVAILABLE

Copying sponsored by Konica

Using Shulman's Model of Pedagogical Reasoning and Action in a Preservice Program

Ron Wilkes

1 Shulman's concepts, categories and model

In his Presidential Address to AERA in 1985 Lee Shulman raised fundamental questions about teacher knowledge and its development and about research paradigms in teacher education. The published version of this address (Shulman, 1986) is often cited for its introduction of the concept of *pedagogical content knowledge*. This form of teacher knowledge, according to Shulman (1986, p.9) 'goes beyond knowledge of subject matter *per se* to the dimension of subject matter *for teaching*.' [1] Later in the same paragraph, Shulman goes on to state that pedagogical content knowledge 'embodies the aspects of content most germane to its teachability.' Despite its familiar overtones and somewhat tautological nature the concept caught on, as witnessed by the frequency of its use in the teacher education literature.

In a second article on teacher knowledge Shulman (1987a) put pedagogical content knowledge into a fuller context as one of seven categories of the knowledge base of teaching. In this article, pedagogical content knowledge is described as

> that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding.....the category most likely to distinguish the understanding of the content specialist from that of the pedagogue. (Shulman, 1987a, p.8)

Shulman then goes on to present a model of pedagogical reasoning and action. In brief, the components of the model are as follows:

Table 1. Processes in Shulman's Model of Pedagogical Reasoning and Action

- Comprehension
- Transformation
  - Preparation
  - Representation
  - Selection
  - Adaptation and tailoring to student characteristics
- Instruction
- Evaluation
- Reflection
- New comprehensions

---

[1] These words echo Schwab's concern with *subject matter for education*. See, for example, Schwab, 1964.

Copying sponsored by Konica

The exact relationship between pedagogical content knowledge and the model of pedagogical reasoning and action was not spelled out by Shulman but may be inferred, at least in general terms, from the above definitions and descriptions. Knowledge suggests something static; an accumulated stock. Reasoning and action, however, imply a dynamic state in which knowledge is being tested and refined and new understandings generated. This view of the dynamics of pedagogy is found in Shulman's model and is particularly evident in the emphasis on processes involved in teaching and in the inclusion of action as well as pedagogical reasoning.

The literature on Shulman's ideas appears to support this view of the relationship between his two conceptions of pedagogy. Marks (1990) claims that pedagogical content knowledge results from a *process* involving interpretation and transformation of subject matter. According to Fieman-Nemser and Parker (1990) Shulman's ideas relate to *interaction* between different kinds of knowledge including subject matter understanding. This idea is taken further by Gudmundsdottir in the assertion that 'the content in pedagogical content knowledge has to be reorganized to take into consideration students, classrooms, and curriculum.' (1990, p.47) Given the variable nature of students, classrooms and curriculum it follows that such reorganisation would have to be an ongoing process.

To me as a teacher educator the appeal of Shulman's model resides in its dynamic nature and in its focus on *transformation* of subject matter as an aspect of pedagogical reasoning. The model, it seems to me, provides a key to understanding the development of pedagogical content knowledge and hence to understanding at least some aspects of the professional growth of teachers.

I am not alone in this view. An entire issue of the journal of Teacher Education (May-June 1990) was devoted to the theme of pedagogical content knowledge.[2] An editorial comment in that issue of the journal claims that

> teacher education strategies are needed to help prospective teachers develop their understanding of pedagogical content knowledge and skill in pedagogical reasoning. (Ashton, 1990, p.2)

---

[2] Pedagogical content knowledge may have buzz-word currency but it has not achieved complete acceptance among scholars and researchers in teacher education. Sockett (1987) produced a forceful and comprehensive critique of Shulman's ideas and strategy, to which Shulman (1987b) responded at length. Since that notable exchange some eminent authorities e.g. Stones (1992) and Kagan (1992) have expressed criticisms or strong reservations about Shulman's conceptual framework and research program.

Copying sponsored by Konica

In my experience it is not uncommon for preservice teachers to have difficulty in proceeding from the first to the third parts of Shulman's model i.e. from comprehension to instruction. The hazards include giving excessive time and unfocused attention to comprehension of the subject matter they have to teach; attempting to plan instruction without necessary attention to transformation of subject matter; finding no adequate forms of representation for abstract concepts; having too limited a representational repertoire; and occasionally falling victim to a form of methods fetishism (Bartolome, 1994) in which facility with as many instructional methods as possible is seen as the be-all and end-all of teaching.

It seems to me that Shulman's model provides an open and flexible basis for dealing with the interface between content and instructional methods. Beginning in 1993 I found ways to incorporate the model in my teaching with particular focus on *transformation* and on the *preparation* and *representation* components of that process.

2 Shulman's model in a preservice program

The 4-year program leading to the Bachelor of Education (Secondary) at the University of Melbourne requires a combination of education studies and discipline studies. At the intersection of these two sets lies a third category of subject in which the focus is on links between education and the disciplines. These so-called link studies are substantial subject offerings at third and fourth year levels, accounting for a total of 25 points in the BEd (where 100 points is a full year's workload).

Business Studies Disciplines and Education is a 12.5 point first semester link study subject catering in 1994 for about 75 students, mainly fourth-year, who are preparing to teach some combination of economics, accounting, legal studies, business management, information technology and middle school commerce. In terms of Shulman's categories of the knowledge base of teaching, this link study subject deals with curriculum knowledge and with pedagogical content knowledge. The latter is the focus of this paper.

Incorporating Shulman's ideas in a BEd subject

Shulman's categories of the knowledge base (Shulman 1987a) were introduced in an early lecture to contextualise the link study subject within the BEd program and to provide a 'big picture' point

Copying sponsored by Konica

of reference for use at various stages of the semester. After several weeks of lectures and workshops focused on curriculum knowledge this big picture was re-visited to facilitate the transition to the topic of pedagogical content knowledge.

My treatment of pedagogical content knowledge gave little attention to the Shulman-led 'wisdom of practice' studies (Shulman, 1986, 1987a); the associated case studies and a noteworthy set of interchanges on problems in qualitative research (Gudmundsdottir, 1991; Hall and Grant, 1991; Grant, 1991; Clark, 1991; Shulman, 1991). Instead, I chose to present Shulman's model of pedagogical reasoning and action as a set of processes of central importance to the development of pedagogical content knowledge. I did this because I thought that the practical nature of the model provides a number of useful points of access for trainee teachers.

The first two (preactive) elements in Shulman's model provide a basis for reinforcement of important points regarding preparation for teaching. Through lectures and workshop activities the preservice trainees heard and were required to think about the precise nature of comprehension and transformation as expounded by Shulman.

The processes within transformation received varying amounts of time. Preparation was examined briefly through general discussion of student-teacher experience while on teaching rounds in the previous year. Representation was the component to which most attention was given. This occurred through a sytematic unpacking of the notion of *representational repertoire.* Students read excerpts from Shulman (1987a) and located the forms of representation referred to therein. The list includes analogies, metaphors, examples, illustrations, explanations, demonstrations and simulations. Instances of these forms were then examined in class. Each instance consisted of a particular form of representation for a particular concept from one of the business studies subjects.

After considering instances from my original work, from the assignment work of the previous year's class and from textbooks, the link study students contributed instances drawn from their own experience. These instances came from their teaching experience the previous year, their observations of supervising teachers and their recollections of teachers who had taught them. After the workshop sessions in which this activity occurred I was left with the strong impression that the focus on teachers actively transforming concepts and on a repertoire of forms of

Copying sponsored by Konica

representation had provided new and potentially valuable perspectives for the student-teachers involved.

Next, the link study class was guided to the conclusion that the process of transformation in Shulman's model is partly about the adoption of expository devices for the purpose of enhancing teacher explanations and partly about the development of student-centred learning activities. This fundamental distinction was examined as to its origins in Shulman's writing and was then related to *selection* as a component of the process of *transformation* in the model of pedagogical reasoning and action. As explained below, the distinction was reinforced in the assignment options in the link study subject.

The remaining component of the transformation process, *adaptation and tailoring to student characteristics*, received brief attention. As a process in teaching this component is important and is a matter of explicit attention in well known theoretical formulations e.g. Ausubel (1968) and Osborne and Wittrock (1985). I emphasised its importance and pointed out that this aspect of Shulman's model was likely to affect their work on the second assignment task. But I considered it to be too remote for any further attention at that stage of the on-campus program since the student-teachers had no knowledge of the classes they would be teaching during their two- or three-week blocks of school experience.

Assignments on the process of transformation

In accordance with the emphasis on transformation in lectures and workshops, two assignment topics in the link study subject focused on this part of Shulman's model. One task required the development of an expository device while the other required transformation of subject matter into a cohesive package of exercises and activities for secondary students. The pattern of options among assignments permitted students to do both tasks.

Structured Task 1

The first task was due about half way through the semester. In this task all of the expository forms of representation given by Shulman were available for inclusion in the assignment. The task required student teachers to develop ideas for teaching a concept from one of the subjects in the business studies field. Specifications for the task were detailed and in essence required the student-teachers to identify a concept and a curriculum context (secondary school subject and year level) and then write a report on the

Copying sponsored by Konica

development of ideas for the transformation of that concept for teaching purposes. Associated materials for teaching were also part of the assignment.

Structured Task 2

The second assignment task was more complex and is embedded in one of the knottier points of Shulman's theory. To explain the task it is necessary to examine some parts of Shulman's 1987a article. That article is notable not only for introducing the categories of the knowledge base of teaching and the model of pedagogical reasoning and action but also for the incorporation of instructional forms that provide students with a more active role in their learning.[3] Thus development as a teacher is

> becoming able to elucidate subject matter in new ways, reorganize and partition it, clothe it in *activities* and emotions, in metaphors and *exercises*, and in examples and demonstrations, so that it can be grasped by students. (Shulman, 1987a, p.13, emphasis added)

In Shulman's description of the model of pedagogical reasoning and action *representation* involves the construction of a representational repertoire of devices to assist teacher explanation. Within the next component (still within the process of transformation) *selection* occurs from an instructional repertoire. It is at this point in Shulman's model that more active forms of learning are admitted.

> Instructional selections occur when the teacher must move from the reformulation of content through representations to the embodiment of representations in instructional forms or methods. Here the teacher draws upon an instructional repertoire of approaches or strategies of teaching. This repertoire can be quite rich including not only the more conventional alternatives such as lecture, demonstration, recitation, or seatwork, but also a variety of forms of cooperative learning, reciprocal teaching, Socratic dialogue, discovery learning, project methods, and learning outside the classroom setting. (Shulman, 1987a, pp.16-17)

The second assignment is concerned with what Shulman refers to as 'the embodiment of representations in instructional forms or methods'. The assignment task deals with teaching methods in which sets of teacher-developed exercises and activities are conceived as a particular form of representation of subject matter.

---

[3] Shulman has been criticised for dealing only with transmission of content knowledge or 'delivery teaching' (Stones, 1992, p.279). The criticism may apply to the original article (Shulman, 1986) but it would be very difficult to sustain in relation to the later one (Shulman, 1987a).

Copying sponsored by Konica

To ensure that the task was clearly understood and to equip student-teachers to cope with it, several workshop sessions were devoted to hands-on inspection of exemplary packages of exercises and activities, to detailed consideration of possible lines of approach to the assignment and, (at stages of semester when part of the class was out on teaching rounds) to supervised workshopping of individual assignment work.

3 Results and Discussion

(a) First Structured Task[4]

Not surprisingly, there was considerable variation in the nature and quality of work submitted on this structured assignment task. The task required the student-teachers to understand and to use parts of Shulman's model; to adopt the model as a frame of reference. There follows a loose categorisation of the extent to which they did this.

In a few cases there was no reference to the model and no evidence of any understanding or use of Shulman's ideas. In these cases it seemed possible that the assignments were little more than re-cycled work done at other times and for other purposes. One step up were those whose use of the model could be termed perfunctory. These assignments contained little more than token reference to Shulman. Where the model as a whole or its specific processes were translated into a student's own words, and Shulman was acknowledged, it was possible to infer a higher level of operation.

At the next level, some made implicit use of the model, evidenced by a close parallel between Shulman's account of pedagogical reasoning and the underlying structure of their reported approach to the assignment.

The most advanced use of Shulman's model involved cases in which there was clear evidence that the model had not only been understood and used but internalised and valued. There was diversity in these responses. In some cases the role of imagination in the development of forms of representation for subject matter was a key factor and Shulman's model, or at least the assignment

---

[4] In the 'wisdom of practice' studies (Shulman, 1987a) qualitative research methods include interviews, observations, structured tasks and inspection of materials. The structured assignment tasks reported in this paper involve inspection of materials produced for teaching purposes. I plan to interview and observe a small number of the student teachers in second semester 1994.

Copying sponsored by Konica

topic, appeared to have stimulated the student-teacher's imagination. Others drew ideas for the assignment from previous experience in teaching and found that the model gave a basis for what seemed to be a fairly deep re-interpretation and re-invention of their past practice.

One or two worked hard and long through *preparation* and *representation* and made these parts of the model into a rich lode by coming up with original, thought provoking and highly impressive materials for teaching. One even used the model as the basis for her own investigation into the learning processes of a close friend. What she discovered about forms of representation then fed into her own work on the materials development aspects of the assignment.

In reporting results of an informal analysis of assignment work submitted it is important to note that the task had two parts; the writing of a report on the development of ideas for teaching, and the actual development of those ideas into one of the forms of representation included in Shulman's model.

There was variety in the forms of representation contained in the assignments: analogies, examples, illustrations, explanations, demonstrations and simulations were all included. In most cases the materials made a feature of some sort of visual device, e.g. cartoons, diagrams, flow charts, sketches, information summaries and comic strips. With few exceptions the materials were carefully developed. It occurred to me while marking the assignments that the materials contained possibilities for display, student-teacher presentations, and pooling and sharing of resources.[5]

(b) Impact on practice: review of a teaching round

The impact of the study of Shulman's ideas on the trainee teachers' practice in schools is an important area of investigation. Ideally, this would be done through intensive field studies. For practical reasons this approach was not possible and so in the first class back on campus after a three-week teaching round 36 student-teachers from the fourth-year sub group were asked to write anonymous responses to several questions, including: 'How well does Shulman's

---

[5] These possibilities raised questions in my mind about an alternative approach to future teaching and assessment of this part of the link study subject. There are multiple forms of representation combined with multiple secondary school subject interests. The combination opens up groupwork on a jigsaw basis with assessment based on group presentations and individual logbooks.

Copying sponsored by Konica

model of pedagogical reasoning and action fit what you went through on the teaching round?'

Applicability of Shulman's model

Only four respondents denied any fit between the model and their experience on teaching rounds. In contrast, some explicitly and enthusiastically affirmed the applicability of the model. For example

> I think Shulman's model was spot on.....I followed this model quite closely. (Respondent 6)
>
> What I went through was nearly exactly the same as Shulman suggests. (1)

In one case, affirmation of the model was accompanied by a frank admission that the experience in schools involved factors other than the discrete elements within a rational model.

> It (Shulman's model) gives form to the general process I went through except that he did not include the raw panic involved. (3)

Opinions varied on whether the model applied to single lessons or to larger chunks of work.

> Pedagogical reasoning is essential to lesson plans....the steps need to be applied for a *lesson* to flow logically and be learning useful. (4)
>
> There is a definite correlation between the model and my development of a *topic* I had to teach. (5)

Preactive, enactive or postactive?

Shulman's model contains preactive, enactive and postactive parts. In a number of cases respondents stated that the preactive components, especially transformation, were the most applicable to their experience.

> Shulman's model did fit in with what I was going through on the teaching round. Especially the transformation stage. (2)
>
> - comprehension - very much
> - transformation - very, very, very much
> Very little reflection and new comprehension. (18)

The final process - but also a new beginning - in Shulman's model is the attainment of new comprehensions. On this point (which is an important theme to be taken up at a later stage of this paper) one respondent observed that

Copying monitored by Konica

> The 'new comprehensions' are probably still coming. (17)

Is Shulman's model no more than commonsense?

Stones (1992) likens the introduction of Shulman's much-cited concept of *pedagogical content knowledge* to the discovery by one of Moliere's characters that he had been speaking prose all his life. In similar vein, it would be possible - but, I think, unduly cynical - to regard *pedagogical reasoning and action* as elaborated by Shulman (1987a) as comparable to an articulate person discovering that they have been operationalising a model of prose generation for as long as they can remember.

The point is that the model might be no more than commonsense. There was some support for such a view.

> It (Shulman's model) seems to be what teachers do naturally when preparing to teach. (9)

> I wasn't conscious of using Shulman's model when preparing classes. I used my own common sense approach which is similar. (15)

In one case, however, the student-teacher's commonsense was set apart from Shulman's model. In this view the model was neither useful nor commonsensical.

> I didn't follow Shulman's model. I used commonsense. (16)

Can a model be used sub-consciously?

In a number of cases the model was acknowledged as applicable but the student-teachers stated that they were not conscious of it during the teaching round.

> It does fit what I went through on the teaching round although I wasn't constantly thinking about this model. (7)

> I feel that I did follow the model subconsciously without realising. You put it into practice without even knowing. (8)

Promoting reflection and new comprehensions

Despite the reported emphasis on the preactive parts of Shulman's model the postactive was not left out in the review of the teaching round. One student noted

> It (Shulman's model) fits in well now that I think back but at the time I cannot consciously remember taking every point separately. But now that I think back I did go through each stage. (19)

Copying sponsored by Konica

The key to reflection, obviously, is the process of thinking back. Over the course of a semester, with classes before and after a teaching round, there is opportunity to use the later assignment tasks to encourage reflection.

As reported above, the final assignment task in the subject required the student-teachers to transform subject matter into a set of exercises and activities suitable for secondary school students in one of the subjects they are learning to teach. This task requires familiarity with subject matter together with a capacity to generate a diverse, comprehensive and cohesive set of worksheet or assignment-type exercises and activities.

The assignment specification encourages the use of subject matter taught by the student-teachers on their most recently completed teaching round as the basis for the assignment. Inclusion in the assignment of exercises and activities produced on the teaching round was allowed. Under these conditions it is not surprising that 28 of the 36 respondents to the questionnaire reported their intention to base the assignment on work they had taught on the just-completed teaching round. Four others stated that they were uncertain as to whether to use subject matter they had taught on the round.

Given the nature of the assignment, it seemed highly likely that more than a little re-visiting and re-thinking of lessons taught would occur, or in other words that the structured task would lead to a re-invention of aspects of their own practice within a framework derived from theories of pedagogy and its development. Any effects on the student-teachers' reflections or new comprehensions were thus placed on the agenda as matters for further investigation.

(c) Second Structured Task

At the time of writing, the analysis (and the marking) of work produced in response to this second assignment task was incomplete. Some tentative impressions had formed, however, and these are presented below.

Most of the student teachers presented a summary of the contents of their package of exercises and activities. This summary applied to both the aspects of subject matter covered and the thinking or

Copying sponsored by Konica

inquiry skills included.[6] In this way the student-teachers showed that they were conscious of important overall balances in their individual packages. A balanced set of exercises and activities on a topic or a major concept is an effective *transformation* of subject matter, and may be regarded as a form of *representation* of that subject matter. Some of the more astute student-teachers made these connections and included these points in their reports on the work that went into the assignment.

In some cases there was a bottom-up as well as a top-down treatment of the question of what subject matter and what thinking or inquiry skills had gone into the package of exercises and activities. In these cases the individual items within the package were annotated to show precisely what content the secondary students were being asked to deal with and what thinking or inquiry skills they were being asked to use. On the latter, the most widely used schema for classifying were drawn from Bloom et al (1956) and Piper (1976). In a few case other sources were utilised. These were acknowledged as having been encountered in education studies, a separate component of the BEd program.

Some - with active encouragement to do so - included the expository device developed in the first structured assignment task, as reported above. In these cases the device was used as the basis for some of the exercises and activities they had developed. In these cases the transformation of subject matter involved a more than usually complex relationship between the *representation* and *selection* components in Shulman's model. Another way of looking at this particular approach to the assignment task is simply to regard it as a desirable integration between teacher-centred and student-centred classroom strategies.

Through 20 years of involvement in curriculum studies, methods of teaching and school visits for observation of student teachers I have seen countless examples of exercises and activities developed for classroom use by student-teachers. By comparison, the packages of exercises and activities produced as part of this second structured assignment task were on a larger scale. But they were also more disciplined in their production, through the emphasis on the package as a transformation of subject matter *a la* Shulman's model.

---

[6] This distinction can be related to the notions of substantive and syntactical structures of disciplines (Schwab, 1961) which are taken up in Shulman's writings. Disciplinary structures were dealt with in the link study subject with schema such as those from Bloom (1956) and Piper (1976) presented as *de facto* syntactical structures for disciplines in the field of business studies.

Copying sponsored by Konica

4 Conclusions

The venture reported in this paper has not been free of problems. Some of the student teachers were not impressed by Shulman's ideas. Even for those who responded positively, questions remain: whether Shulman's model is the best framework to employ; whether the model will have lasting value for novice teachers; whether it will be discarded as an imposed and useless theory; whether time in a preservice program could be put to better use.

Despite these reservations and cautionary notes, Shulman's model of pedagogical reasoning and action is seen as accessible and practical by almost all the preservice teachers whose exposure to, and use of, the model is reported in this paper. As well as being comprehensible and closely aligned with practice the model is open and flexible. This combination of qualities makes it easy to teach and, more importantly, easy for preservice teachers to use in diverse ways.

There is built-in variety through Shulman's widely inclusive notions of *representational repertoire* and *instructional repertoire* and in the matrix that can be formed by combining these two dimensions. To actively transform subject matter for purposes of teaching is to be imaginative and creative, or at least discerningly selective, with options open as to forms of representation. To then go on and blend chosen forms of representation with chosen instructional methods becomes a matter of exercising skills that are very important in the teaching profession. In all of this, nothing is dictated or imposed; professional autonomy is affirmed, not denied.

These matters are well stated in a written comment by one of my student-teachers

> The strength of Shulman's work is that it decodes, states and clarifies approaches to pedagogy, something that otherwise resembles a jumbled blur of instinctive reactions. Generally, the pedagogy process is made more digestible, yet at the same time does not indoctrinate its readers with what is correct and what is not. The model offers broad umbrellas under which teachers can flex and see-saw according to their own personal propensities or creativities.

In the context reported above, Shulman's model carries another benefit. The model is robust and adaptable across specialist subject fields. In a mixed group of preservice teachers this can contribute towards valuable perspectives in thinking across areas of curriculum. Educators at all levels cannot afford to be earth-bound

Copying sponsored by Konica

on particular patches of traditional turf; we all have to be aerialists these days.

Sockett (1987) claims that Shulman's model is 'loose-limbed as it attempts to be comprehensive' (p.215). Sockett is critical of the absence of a fixed sequence of stages in the model and the lack of specification of some of its processes, especially Shulman's enactive phase which is simply one element in the model, called *instruction*.[7]

In my opinion Sockett misses the point. Shulman's model is not a theory to be applied rigidly but a framework within which it is possible to differentiate between and deal with practical problems of teaching. Models that give order to experience and at the same time facilitate eclectic approaches to practice have an important place in teacher education.

In matters of curriculum, learning and teaching (and in teacher education relating to these) I believe that it is better to have loose-fitting or loose-limbed (i.e. open and flexible) theoretical frameworks than any kind of lock-step (i.e. rigid and prescriptive) theory. For me, this conviction crystallised a long time ago, strongly influenced by Schwab (1969, 1971). The conviction is supported by my experience in teaching Shulman's model to preservice teachers.

The student-teachers to whom the model was taught reacted to it with varying degrees of understanding and enthusiasm. Not surprisingly, there was variation in the quality of work they produced in response to the structured assignment tasks reported above. The most important questions, however, have to do with the impact on their practice as teachers not their performance as students. From the results reported in this paper, indications are that positive effects on teaching can be discerned.

Further investigation of impacts on teaching practice will be conducted in the second half of 1994 with a sub-group of the preservice teachers who took the first semester subject. Research methods in this phase of the study will be extended to include interviews, observations, and case studies.

---

[7] Sockett's main criticism is that Shulman's model is really a checklist for the assessment of teachers. I have ignored this suggestion and taken the model at its face value.

Copying sponsored by Konica

Bibliography

Ashton, P.T. (1990) Editorial. *Journal of Teacher Education*, 41(3), 2.

Ausubel, D.P. (1968) *Educational psychology: a cognitive view.* New York: Holt, Rinehart and Winston.

Bartolome, L.I. (1994) Beyond the methods fetish: Toward a humanizing pedagogy. *Harvard Educational Review*, 64(2), 173-194.

Bloom, B.S. et al (Eds) (1956) *Taxonomy of Educational Objectives: Cognitive Domain.* New York: David McKay.

Clark, C.M. (1991) Real lessons from imaginary teachers. *Journal of Curriculum Studies*, 23(5), 429-433.

Feiman-Nemser, S. and Parker, M.B. (1990) Making subject matter part of the conversation in learning to teach. *Journal of Teacher Education*, 41(3), 32-43.

Grant, G.E. (1991) Ways of constructing classroom meaning: two stories about knowing and seeing. *Journal of Curriculum Studies*, 23(5), 397-408.

Gudmundsdottir, S. (1990) Values in pedagogical content knowledge. *Journal of Teacher Education*, 41(3), 44-52.

Gudmundsdottir, S. (1991) Ways of seeing are ways of knowing. The pedagogical content knowledge of an expert English teacher. *Journal of Curriculum Studies*, 23(5), 409-421.

Hall, S. and Grant, G.E. (1991) On what is known and seen: a conversation with a research participant. *Journal of Curriculum Studies*, 23(5), 423-428.

Kagan, D.M. (1992) Professional growth among preservice and beginning teachers. *Review of Educational Research*, 62(2), 129-169.

Marks, R. (1990) Pedagogical content knowledge: From a mathematical case to a modified conception. *Journal of Teacher Education*, 41(3), 3-11.

BEST COPY AVAILABLE

Copying sponsored by Konica

Osborne, R. and Wittrock, M. (1985) The generative learning model and its implications for science education. *Studies in Science Education*, 12, 59-87.

Piper, K. (1976) *Evaluation in the Social Sciences for Secondary Schools: Teachers Handbook.* Canberra: AGPS.

Schwab, J.J. (1961) Education and the structure of the disciplines. In Westbury, I. and Wilkof, N. *Science, Curriculum and Liberal Education: Selected Essays.* Chicago: University of Chicago Press, 1978.

Schwab, J.J. (1964) Problems, topics and issues. In Phi Delta Kappa, *Education and the Structure of Knowledge.* Chicago: Rand McNally, 1964.

Schwab, J.J. (1969) The practical: A language for curriculum. *School Review*, 78, 1-23.

Schwab, J.J. (1971) The practical: Arts of eclectic. *School Review*, 79: 493-542

Shulman, L.S. (1986) Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.

Shulman, L.S. (1987a) Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.

Shulman, L.S. (1987b) Sounding an alarm: A reply to Sockett. *Harvard Educational Review*, 57(4), 473-482.

Shulman, L.S. (1991) Ways of knowing: ways of teaching, ways of learning about teaching. *Journal of Curriculum Studies*, 23(5), 393-396.

Sockett, H.T. (1987) Has Shulman got the strategy right? *Harvard Educational Review*, 57(2), 208-219.

Stones, E. (1992) *Quality teaching: A sample of cases.* New York: Routledge.

Copying sponsored by Konica